

**FY2004 Epidemiology and Laboratory Capacity (ELC)  
for Infectious Diseases Cooperative Agreement  
Program Announcement #04040**

**National Electronic Disease Surveillance System (NEDSS)  
Appendices (A-E)**

**October 3, 2003**

## **APPENDIX A**

### **Public Health Information Network Functions and Specifications**

1. **The Automated Exchange of Data Between Public Health Partners** - To securely and automatically exchange information, as appropriate, between two computer systems to achieve a “live” network for data exchange between partners in public health
2. **The Use of Electronic Clinical Data for Event Detection** -To receive, manage and process electronic data from care systems at clinical care sites, laboratories, or their proxies
3. **Manual Data Entry for Event Detection and Management** - To accumulate, manage and process information manually entered via a web browser at a health agency or remote site
4. **Specimen and Lab Result Information Management and Exchange** - For laboratories involved in public health testing, to receive laboratory requests, accept specimen and sample data, manage these data and immediately report electronic results to public health partners
5. **Management of Possible Case, Contacts and Threat Data** - To electronically manage, link and process the different types of data (possible cases from detection, possible contacts, facility, lab results, prophylaxis and/or vaccination, adverse events monitoring and follow-up)
6. **Analysis and Visualization** - To analyze, display, report and map accumulated data and share data and technologies for analysis and visualization with other public health partners
7. **Directories of Public Health and Clinical Personnel** - To participate in and maintain directories of public health participants (including primary clinical personnel), including participant roles and contact information
8. **Public Health Information Dissemination and Alerting** - To receive, manage and disseminate alerts, protocols, procedures and other information for public health workers, primary care providers, and public health partners in emergency response
9. **IT Security and Critical Infrastructure Protection** - To ensure that sensitive or critical electronic information and systems are not lost, destroyed, misappropriated or corrupted

For more information on the PHIN functions and standards, please go to  
<http://www.cdc.gov/cic/functions-specs/>

## **APPENDIX B**

### **NEDSS Base System (NBS) Package**

#### **1. NEDSS Base System Overview**

---

##### **What is NEDSS?**

The National Electronic Disease Surveillance System (NEDSS) is an initiative that promotes the use of data and information system standards to advance the development of efficient, integrated, and interoperable surveillance systems at federal, state and local levels. A primary goal of NEDSS is the ongoing, automatic capture and analysis of data that are already available electronically.

NEDSS is based on the following principles:

- Utilization of industry standards
- Reliance on off-the-shelf software
- Internet-based secure transmission of data
- A common "look and feel" of systems
- Common reporting requirements
- No requirement to use specific software

For more information on NEDSS, visit the NEDSS website at <http://www.cdc.gov/nedss/>

##### **What is the NEDSS Base System?**

The NEDSS Base System (NBS) is a specific implementation of NEDSS. The NBS facilitates public health surveillance through the transfer and processing of appropriate public health, laboratory, and clinical data efficiently and securely over the Internet. Release 1.1.1 of the NEDSS Base System imports electronic sources of information to initiate integrated, online public-health investigations and notify appropriate partners of important events electronically. Subsequent releases will incorporate high priority functionality based on the experience of initial deployments.

##### **What is included in the Release 1.1 version of the NEDSS Base System?**

Using the NEDSS Base System, a user can perform the following public health surveillance and investigation functions:

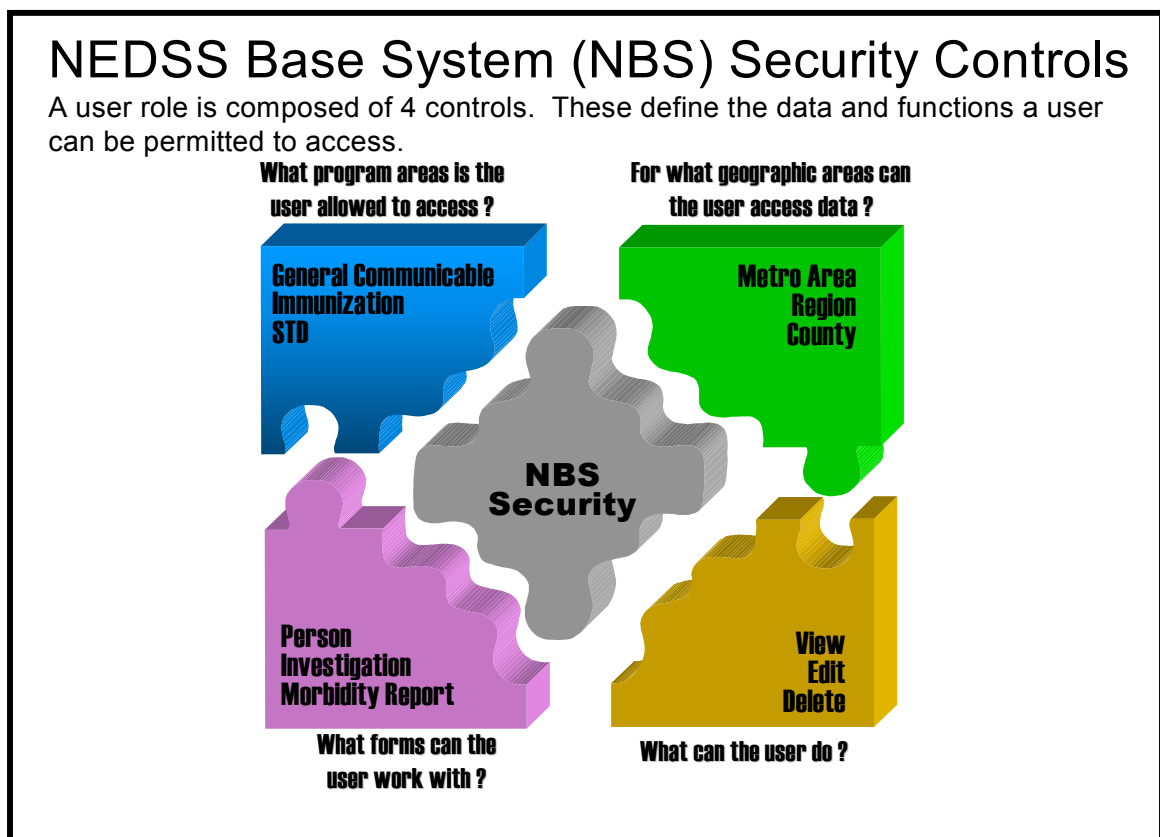
- Enter Data on Persons and Organizations
  - Add, edit, view, and delete data on persons

- Add, edit, view, and delete data on organizations
- Merge duplicate records on persons, including some automatic de-duplication
- Point-in-time demographics
- View all the information contained in the system on a person by viewing the person's file
- Work with
  - Lab and morbidity report (observations):
    - Receive lab reports electronically
    - Add, edit, view, and delete observations
    - Use an observation to initiate an investigation
    - Transfer ownership of an observation to another jurisdiction or program area
  - Vaccination records:
    - Add, edit, view, and delete vaccination records
    - Manage vaccination records by linking them with investigations
  - Treatment records:
    - Add, edit, view, and delete treatment records
    - Manage treatment records by linking them with investigations
  - Investigations:
    - Conduct, edit, and view investigations (see section below for diseases included in Release 1.1)
    - Transfer ownership of an investigation to another jurisdiction
  - Summary data on outbreaks - e.g. varicella:
    - Add a new summary report, including site of outbreak
    - Enter and edit summary data for a particular condition
    - Send a Summary Notification
  - Locally Defined Fields (LDFs)
  - Remote/External user data entry
- Prepare reports using system data:
  - Standard reports

- Tables, graphs and maps
- Custom Reports
- Export, save and delete a report
- Manage system security:
  - Add, edit and view access permission sets
  - Add, edit and view users
- Monitor Electronic Lab Reporting (ELR) activity
- Notifications:
  - Create notifications
  - Review notifications for approval
  - Submit notifications to the state and/or the CDC

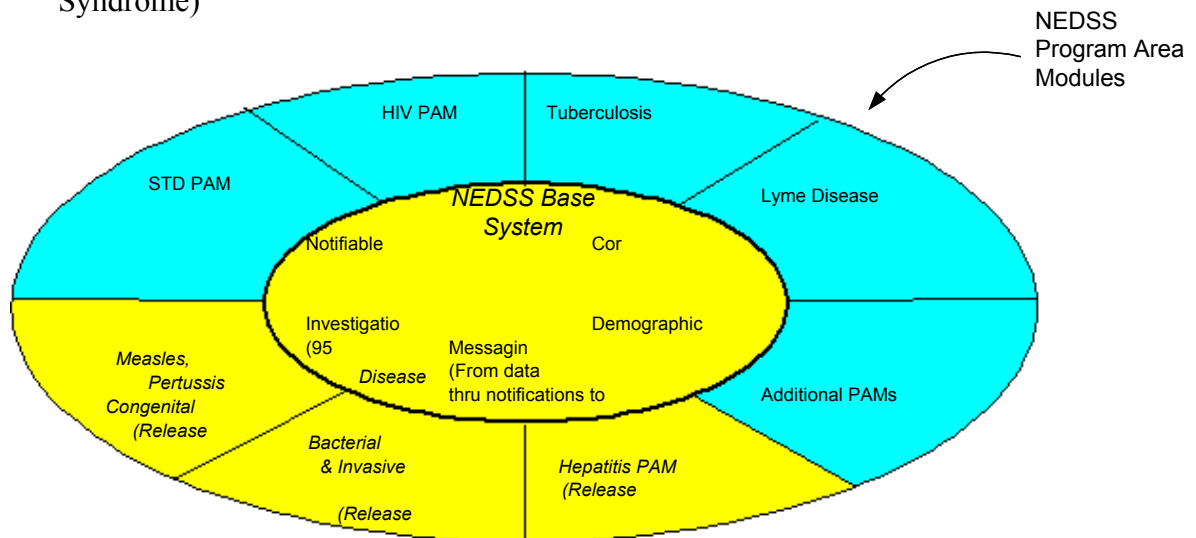
## Security

Access to the various NBS screens and functions depends on the user's assigned role and security permissions. A user not authorized for certain functions will not see those functions on their screen.



## Diseases Included in Release 1.1.1

- Core Investigation Functionality (approximately 95 diseases)
- Extended Investigation Functionality in PAMs (Program Area Modules)
  - Hepatitis (A, B, C, Delta, E, non-ABC)
  - Bacterial Meningitis and Invasive Respiratory Diseases (Meningococcal, *Streptococcus pneumoniae*, *Haemophilus influenzae*, Group A and Group B Streptococcus)
  - Vaccine Preventable Diseases (Measles, Rubella, Pertussis, Congenital Rubella Syndrome)



## NBS Terminology

**Program Area Module (PAM):** These are additions to the system designed to accommodate disease specific functionality or data gathering beyond what is provided in the Base System.

**Person:** Record type that represents information for subjects/patients, physicians, reporters, etc.

**Organization:** Record type that represents information for hospitals, reporting sources, etc.

**File:** View of Person's information: contains demographics, observations, investigations, and vaccination records if they exist.

**Investigation:** Information regarding one incidence of a disease. The generic form is used for all diseases that are not included in a PAM (Program Area Module).

**Investigation Questions:** Information contained within an investigation, often interpretive in nature (e.g.: Rash Onset Date). The generic form includes questions categorized in the following sections: Investigation Summary, Reporting Source, Clinical, Epidemiological, and

Administrative. The PAM diseases (e.g.: Hepatitis) contain these questions or a subset along with disease specific questions.

**Observation:** These reports come in to the Health Department from a reporting source. They often trigger the start of a public health case investigation or complement it.

- Lab Report – originates from a lab in either paper or electronic format, contains lab order and results information.
- Morbidity Report – originates from health care provider (e.g.: hospital, doctor's office) and contains basic data regarding one instance of a disease. Comes in to Health Department from a paper report or means other than electronic message

**Vaccination Record:** Information related to the administering of a vaccine (e.g.: Mfr, Lot #, Date Administered).

**Manage Observations:** Act of associating or disassociating an observation with an investigation. An observation is associated with an investigation when its content represents information related to the investigation. Observations may exist in a person's file unrelated to any investigation, or related to one or more.

**Transfer Ownership:** Act of changing ownership of an observation or investigation from one jurisdiction and/or program area to another. The program area/jurisdiction owners are responsible for investigating and resolving any tasks associated with the information. Ownership determines visibility through Security.

**Notification:** Nationally Notifiable Disease Message sent to the CDC from the state. Contains the investigation data and all associated observations and vaccinations for each case of a disease.

**Summary Report:** While some conditions such as Measles and Hepatitis require detailed reporting at an individual case level, other conditions may be reported in aggregate format. Summary data provides for weekly counts of certain conditions.

**Permission Set:** A permission set is a collection of objects and operations the user can access (e.g.: Add a Person). NBS Release 1.0 will be delivered with eight default permission sets. The system will restrict user access to only those screens and functions corresponding to the objects and operations that the user has permission to use, as defined by the user's permission set. There are two access levels defined in a permission set, user and guest. For all of the system delivered permission sets, guests have read only privileges. Additional permission sets can be created for different guest privileges.

**Guest Indicator:** A component of a user's role that indicates if a user is a guest. If checked, the user will have guest access to those objects as defined in their permission set. If not checked, the user will have user access to those objects as defined in their permission set.



**Role:** When a user is assigned a permission set, the user will also be assigned the appropriate Program Area(s), Jurisdiction(s), and access level (user or guest). This combination of Permission Set, Program Area, Jurisdiction and Guest Indicator is referred to as a user's Role. A user may have several roles.

**Shared Indicator:** This indicator, when checked on an observation or investigation, gives guests from other Program Areas and Jurisdictions access to the record. As an example, if the user has guest privileges to view STD investigations in Davidson County, then any Davidson County STD investigation with a checked Guest Indicator will be viewable to the user.

**ELR Activity Log:** The ELR Activity Log provides information on the transfer of lab results into the NEDSS Base System. This information enables action to be taken to resolve outstanding issues with lab result transfers, either through re-transmission of the data from the source or by manually adding a lab result.

**Reporting Data Mart:** A flattened, simplified view of the database tables. Reports are run from these tables rather than the ODS (Operational Data Store) to provide easier access to data and faster processing times. The NBS comes with a user interface to access this Data Mart, but users may also use their own tools (SAS, etc.) for more detailed reporting.

**Standard Report:** A report that is delivered as part of NEDSS Base System

**Custom Report:** A report that is similar to a query allowing the user to select which data elements (columns) are to be output

**My Report List:** The list of reports created by the user, could include both private and public reports

**Public Report List:** The list of reports shared among users. Can include standard and individually created reports

## 2. Applicant and CDC Responsibilities

---

States that want to implement the NBS should request each of the components of the NBS package shown under “Applicants should request” below or should demonstrate how they are available through existing resources.

### **Applicants should request:**

1. Personnel (if not available through existing resources or capable of being funded from other sources):

Operational Data Store (ODS) Manager - This position will be responsible for operational maintenance and security of the ODS. He or she will ensure that the database management system is operational and secure, supervise at least weekly full back-ups with daily incremental back-ups, apply and maintain appropriate personnel access and authorizations, and oversee importing legacy and ongoing data into the ODS. He or she will also be responsible for maintaining some controlled vocabularies that will be downloaded to the ODS. This position may also support systems management functions for the site web and application server as appropriate.

NBS Registry Manager - This position will be responsible for maintaining data and functions in the ODS. He or she will maintain a person registry that will be shared by multiple programs, maintain an up-to-date person list, support the de-duplication of person records, facilitate the evaluation of incoming data, triage data according to program needs, and direct data and reports to appropriate personnel.

2. Technical Assistance for Deployment and Training - All applicants should request time-limited, on-site deployment support and training for the implementation of the NBS. Deployment tasks will include implementing the NBS into the existing state network for use on the intranet or internet, assistance in migrating legacy data, configuring the NBS for the recipient, and training for using the NBS. Recipients can expect several days of on-site work spread over multiple visits from CDC personnel and contractors as part of an on-site deployment team.
3. Hardware (if not available through existing resources or capable of being funded from other sources):

See hardware specifications at the end of this appendix. Please note the NBS configuration now consists of four servers: 1 Web Server, 1 Database Server, and 2 Application Servers. Also, pay special attention to the sample minimum server specifications for each of the different types of servers listed (Web Server, Database Server, Application Server). Some prices for sample configurations are also given for 2 vendors at the end of the document. \*\*\*These configurations, prices, and vendors are for illustrative purposes only and should be viewed as such. CDC is not recommending

these vendors over others, is not intending these prices be used as benchmarks of any kind, and is not mandating these configurations\*\*\*

4. Software (if not available through existing resources or capable of being funded from other sources):

Operating System Software - All servers should be running on Windows 2000 Advanced Server SP4. Options are being explored for supporting at least one of the several current versions of UNIX.

Relational Database Management System Software - Microsoft SQL Server 2000 and Oracle RDBMS version 8.0 or higher are currently supported.

Web Server Software - Recipients will provide access to a network connected web server with managed system security and operations support running Microsoft's IIS version 5.0 or Apache.

LDAP Software - Recipients will need to purchase iPlanet Directory Server 5.0.

#### **CDC will provide:**

1. Software - The NBS package includes the NBS application and the PHIN MS (Appendix D) that a deployment team consisting of both CDC and CSC personnel will install, configure, and support. Supporting software that will be provided includes J2EE application server software, BEA WebLogic v7.0 SP4. This will be a Runtime Only version, meaning no further development using BEA WebLogic v7.0 SP4 can take place without the purchase of a new license. Also, a Runtime Only version of eLink software for electronic exchange of data is included. A full version of SAS v8.2 will be included for analysis and reporting. Jakarta Ant 1.5.1, Cocoon, JDK 1.3.1 and JAVA 2 SDK will also be provided and installed.
2. Program Area Modules (PAM) - NBS recipients will be able to receive future PAMs as they become available and integrate them with their NBS.
3. Helpdesk & Technical Support - NBS recipients will have access to technical support via a newly created NBS helpdesk.

### 3. Hardware Specifications

---

#### **NEDSS Base System Deployment Platform Hardware Specifications**

**Version Date: 10/03/2003**

##### **Introduction:**

This document provides guidance for selection of server platforms to support the NEDSS Base System (NBS) including:

1. Recommended NBS Hardware Configuration,
2. Sample Minimum Server Specifications and
3. Sample Vendor Offerings.

##### **1. Recommended NBS Hardware Configuration**

Deployment of the NBS requires hardware support for the following major service components:

1. Web-Server
2. J2EE Application Server
3. IDR RDBMS Server
4. Security Profile Database (an internal LDAP directory)
5. Analysis, Visualization and Reporting (AVR) Services suite (SAS, GIS, Report Generator, etc)
6. Messaging Transformation and Transport Services (message translation, encryption, and ebXML transport)
7. Continuation of Operations Support Services (transaction logging, backup and recovery)

This partitioning of the NBS functionality highlights the opportunities to supply high reliability, high capacity and high performance by the use of multiple clustered server platforms.

The most important variables affecting the capacity/performance characteristics of a server are:

1. The number of processors
2. The processor speed (in MHz)
3. The cache sizes (Kbytes)
4. The address bus speed (in MHz)
5. The total available RAM (in Gbytes)
6. The total available hard disk storage (in Gbytes)
7. The choice of storage architecture (non-RAID, RAID 1, RAID-5, SAN, etc)
8. Type and number of available peripheral slots (ISA vs. PCI)
9. CD-R/W speed
10. Backup/restore method

The relative importance of these characteristics varies depending upon the specific functionality to be supported. The recommendations presented below balance all of the above characteristics to best serve the additional requirements:

- That machine failure be addressable by moving the service(s) off of the failed machine and onto one of the other machines in the cluster,

- That growth can be accommodated by the addition of a generic machine to the cluster

Selection of a hardware platform includes optimizing the expansion capacity.

**The Recommended NBS Hardware Configuration consists of four (4) machines**

1. **Type 1 - Web-server**
2. **Type 2 - RDBMS plus Continuation of Operations Services**
3. **Type 3 - Type Application Server plus Analysis, Reporting and Visualization Services\***
4. **Type 3 - Security Profile Database plus Message Transformation and Transport Services\***

\*Currently the NBS is installed on three server configurations. In the very near future this configuration will be expanded to include a fourth server. The above four server configuration is one illustration of how the NBS service components that currently reside on a single application server could be distributed among two servers (servers 3 & 4).

To repeat, growth in requirements may motivate the movement of other service components onto separate machines. The most likely near term requirement for an additional machine would be to move the AVR Services onto a separate server.

## **2. Sample minimum server specifications**

PLEASE NOTE: These are old specifications and dollar values should be disregarded. These represent the MINIMUM specifications one should have to run the NBS.

### **Type 1: Web Server (Minimum)**

Processors	2 PIII Xeon	
Processor Speed	700 MHz	
Processor Cache	512 KB (L2)	
Bus Speed	100 MHz	
RAM	2 GB	
Storage	4x9 GB	
Storage arch	RAID-0	
Slots	4 PCI	
CD-R/W	16/10/24	
Backup/Restore	Single DAT drive	
Network I/O Card	2 10/100 Ethernet cards	Assuming State Uses Ethernet

### **Type 2: Database Server (Minimum)**

Processors	2	
Speed	900 MHz	At this point, higher speed is often cheaper
Processor Cache	2 MB (L2) or 1 MB (L3) per processor	Recommended due to CPU intensive database components. Specific L2 or L3 options depend on vendor and processor speed.

Bus Speed	100 MHz	
RAM	4 GB	Recommended for database supporting online and batch processing.
Storage	6x36 GB	1 for OS, 1 for RAID, 4 for usable space
Storage arch	RAID-0 and RAID-5	OS is on RAID-0 Database TempDB on RAID-0 Datgabase Logs on RAID-0 Database data is on RAID-5
Slots	4 PCI	
CD-R/W	16/10/24	
Backup/Restore	Single DAT drive	
Network I/O Card	2 10/100 Ethernet cards	Assuming State Uses Ethernet

### **Type 3: Application Server (Minimum)**

Processors	2 PIII Xeon	
Speed	900 MHz	At this point, higher speed is often cheaper
Processor Cache	1 MB (L2) or 512 KB (L3) per processor	Recommended due to CPU intensive components. Specific L2 or L3 options depend on vendor and processor speed.
Bus Speed	100 MHz	
RAM	4 GB	Recommended for Tomcat/SilverStream Java Virtual Machine supporting online and batch processing
Storage	4x18.1 GB (SCSI)	At this point, 9 GB drives are essentially obsolete, and if 9 GB is found, 18.1 GB will be similar price
Storage arch	RAID-0 or RAID-5	Only disk writes are to log files, so RAID-0 should be OK. If hot swap is desired, then RAID-5 is needed.
Slots	4 PCI	4 to 6 will be standard depending on vendor
CD-R/W	16/10/24	
Backup/Restore	Single DAT drive	
Network I/O Card	2 10/100 Ethernet cards	Assuming State Uses Ethernet

### **3. Sample Vendor Offerings**

The following machines from IBM and Dell are illustrative samples only and do not recommend specific product recommendations by CDC. The vendor specifications are representative samples taken from vendor websites and do not reflect any applicable discounts. The actual specifications needed to be ordered will depend on state decisions, the time when orders are made because vendor offerings will change over time, and continued refinement of state-specific

performance/capacity planning evaluations. Costs will also vary based on server configuration option selected (Rack Mount only, Tower only, or Tower & Rack Mount interchangeable).

Moderate Capacity: IBM xSeries

<u>Base Model Features and Specifications</u>		<u>Part No</u>	<u>Unit Price*</u>	<u>Quantity</u>	<u>Price*</u>
IBM xSeries 342					
xSeries 342		86695RX	\$2,459.00	1	\$2,459.00
Form factor	Rack				
Processor type	Pentium III				
Processor speed	1400 MHz				
Processor cache	512 KB				
Maximum storage	440 GB				
Hot swap HDD	Yes				
Memory	256 MB				
Maximum memory	4096 MB				
Optical drive	24X-10X CD-ROM				
<u>Accessories and Options Selected</u>					
10/100 Ethernet Server Adapter		06P3601	\$99.00	1	\$99.00
ServeRAID-4Lx Ultra160 SCSI Controller		06P5740	\$659.00	1	\$659.00
RAID 5 - Primary Array - minimum of 3 HDDs required		32P9660	\$0.00	1	\$0.00
IBM 18.2 GB 10K-rpm Ultra160 SCSI Hot-Swap SL HDD		06P5754	\$275.00	4	\$1,100.00
Internal RAID - Cabled and Setup		32P9667	\$0.00	1	\$0.00
IBM 512MB PC133 ECC SDRAM RDIMM		33L3324	\$499.00	2	\$998.00
Netfinity 3-Pack Ultra160 Hot-Swap Expansion Kit		33L5050	\$319.00	1	\$319.00
270W Hot-Swap Redundant Power Supply		37L6880	\$224.00	1	\$224.00
xSeries 1.4 GHz/133 MHz - 512 KB Cache Upgrade with Pentium III Processor		48P7467	\$699.00	1	\$699.00
Total					\$6,557.00

**Higher Capacity: IBM xSeries**

<b><u>Base Model Features and Specifications</u></b>		<b><u>Part No</u></b>	<b><u>Unit Price*</u></b>	<b><u>Quantity</u></b>	<b><u>Price*</u></b>
IBM xSeries360					
xSeries 360		86863R	\$18,309.	1	\$18,309.00
Form factor	Rack	Y	00		
Processor type	Xeon				
Processor speed	1600 MHz				
Processor cache	1024 KB				
Maximum storage	220 GB				
Hot swap HDD	Yes				
Memory	2048 MB				
Maximum memory	8192 MB				
Optical drive	24X-10X CD-ROM				

**Accessories and Options Selected**

10/100 Ethernet Server Adapter	06P3601	\$99.00	1	\$99.00
ServeRAID-4Lx Ultra160 SCSI Controller	06P5740	\$659.00	1	\$659.00
IBM 36.4 GB 10K-rpm Ultra160 SCSI Hot-Swap SL HDD	06P5755	\$439.00	3	\$1,317.00
xSeries 1.6 GHz 1 MB L3 Cache Upgrade with Xeon Processor MP	19K4647	\$6,199.00	1	\$6,199.00
Internal RAID – Cabled only, Setup by Customer	32P9668	\$0.00	1	\$0.00
IBM 1 GB PC1600 ECC DDR SDRAM RDIMM	33L3285	\$989.00	2	\$1,978.00
Total				\$28,561.00

**Moderate Capacity: Dell PowerEdge 2550**

PowerEdge 2550, Intel Pentium III, 1.4Ghz w/ 512 Cache \$8,396.85

**Accessories and Options Selected**

Additional Processor Intel Pentium III, 1.4Ghz w/512 Cache



Memory	2Gb SDRAM 133Mhz
1 <sup>st</sup> Hard drive	18Gb 15K RPM Ultra 160 SCSI
2nd Hard drive	18Gb 15K RPM Ultra 160 SCSI
3 <sup>rd</sup> Hard drive	18Gb 15K RPM Ultra 160 SCSI
Primary Controller	PERC3 128 cache 2 int channels
Diskette Drive	1.44Mb
First/Second NIC	one integrated 10/100 and one integrated 10/100/1000
Hard Drive config	Add in Raid 5 1-5connected to add in RAID card
Power Supply	Dual Redundant 330 Watt

### **Higher Capacity: Dell PowerEdge 6550**

PowerEdge 6550, Intel Xeon, 1.6Ghz w/ 1Mb Cache \$26,997.31

### **Accessories and Options Selected**

Additional Processor	Intel Xeon, 1.6Ghz w/ 1Mb Cache
Additional Processor	Intel Xeon, 1.6Ghz w/ 1Mb Cache
Additional Processor	Intel Xeon, 1.6Ghz w/ 1Mb Cache
Memory	4Gb DDR SDRAM 133Mhz
1 <sup>st</sup> Hard drive	18Gb 15K RPM Ultra 160 SCSI
2nd Hard drive	18Gb 15K RPM Ultra 160 SCSI
3 <sup>rd</sup> Hard drive	18Gb 15K RPM Ultra 160 SCSI
4th Hard drive	18Gb 15K RPM Ultra 160 SCSI
Primary Controller	PERC3 128 cache 2 int channels
Diskette Drive	1.44Mb
First/Second NIC	one integrated 10/100 and one integrated 10/100/1000
Hard Drive config	Add in Raid 5 1-5connected to add in RAID card
Power Supply	Dual Redundant 330 Watt

## **Appendix C: NEDSS Architecture, Functional and Technical Specifications**

- 1. Standards-based Electronic Lab Reporting (ELR) and messaging**
- 2. Web browser-based data entry and data management**
- 3. Central, integrated operational data store**
- 4. Data transformation and exchange functionality**
- 5. Analysis and reporting capability**
- 6. Shareable public health directory**
- 7. HIPAA-compliant security infrastructure and policies, including two-factor authentication**
- 8. Contemporary programming practices for modular, cross-platform development**

For more information on the NEDSS Architecture, please go to  
<http://www.cdc.gov/nedss/NedssArchitecture/>

## Appendix D: Public Health Information Network Messaging System (PHINMS)

### Public Health Information Network Messaging System

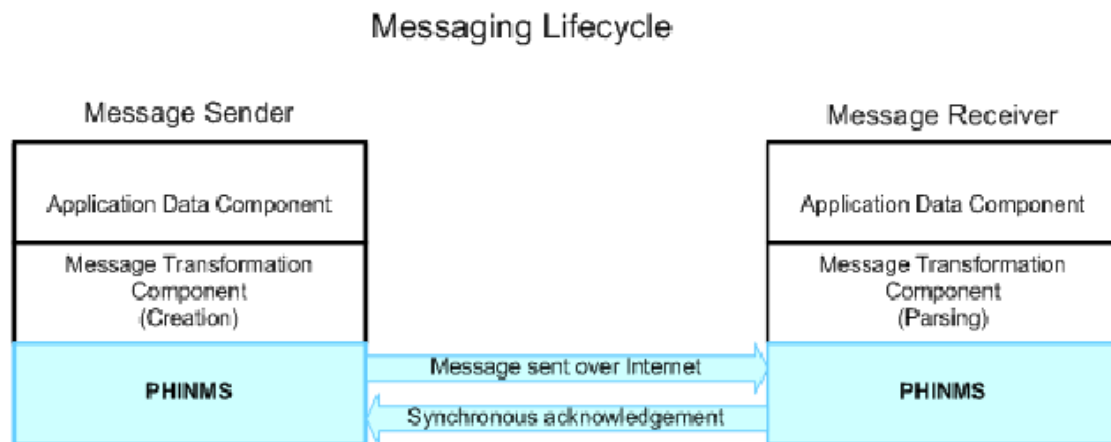
This document provides an overview of the Public Health Information Network Messaging System, PHINMS. It is intended for users, administrators and programmers and it provides general information about how the PHINMS works. For installation and configuration of the PHINMS software see the PHINMS Client Installation Guide and the PHINMS Server Installation Guide.

### Functional Description

Developed by the Centers for Disease Control and Prevention, The Public Health Information Network Messaging System, PHINMS, uses the Electronic Business Extensible Markup Language, ebXML, infrastructure to securely transmit public health information over the Internet.

PHINMS is a generic, standards-based, interoperable and extensible message transport system. It is platform-independent and loosely coupled with systems that produce outgoing messages or consume incoming messages.

Within NEDSS, the National Electronic Disease Surveillance System, PHINMS functions as a component as shown in the following diagram:



PHINMS is loosely coupled with the Message Transformation Component. It uses a Transport Queue interface to read and write outgoing and incoming messages. The Transport Queue is implemented as a database table or as a file system directory.

## Major Components

PHINMS has three major components: the Message Sender, Message Receiver and the Message Handler.



### Message Sender

The Message Sender functions as the client. It is a Java application that runs on a workstation or server. The Message Sender polls the Transport Queue for outgoing data. The Transport Queue can be a database table or a file system directory. When outgoing data is found, the Message Sender packages the data as an ebXML message and sends it to the Message Receiver.

### Message Receiver

The Message Receiver functions as a server. It is a servlet that runs on a J2EE compliant application server. When the Message Receiver receives a message, it processes the message envelope, decrypts the message, verifies the signature and then forwards the message payload to the Message Handler or writes the message directly into a worker queue. Afterward the Message Receiver waits for an application status from the Message Handler and when it receives the status it forwards it to the Message Sender.

### Message Handler

The Message Handler functions as a server. It is a servlet that runs on a J2EE compliant application server. The Message Handler and the Message Receiver can reside on the same system. When the Message Handler receives the message payload from the Message Receiver it processes the message payload and then sends a response, which contains the Message Handler's status, back to the Message Receiver.

For more information on PHIN MS, please go to  
<http://www.cdc.gov/phn/messaging/index.htm>

## **Appendix E:**

### **Implementation Guides For Public Health Electronic Messaging**

Specification Guides for the electronic exchange various types of data are available on the PHIN website, <http://www.cdc.gov/phn/messaging/index.htm>

## **Epidemiology and Laboratory Capacity Program Contacts**

### **Attachment 1 - Antimicrobial Resistance**

Pneumococcal Surveillance –

Leigh Anne Hawley

Office: (404) 639-4745

Appropriate Antibiotic Use –

Jerry Willis

Office: (404) 371-5337

General surveillance (Clinical lab QA) –

Todd Weber, MD

Office: (404) 639-2603

### **Attachment 2 - Foodborne Diseases**

EFORS/Surveillance

Paul Mead

Office: (404) 639-3234

Pulsenet/PulseNet Area Laboratories

Bala Swaminathan

Office: (404) 639-3669

Dan Cameron

Office: (404) 639-2206

DPDx

Alex DaSilva

Office: (770) 488-4072

Foodborne Viruses

Steve Monroe

Office: (404) 639-2391

Foodborne Parasites

Mark Eberhard

Office: (770) 488-4419

**Epidemiology and Laboratory Capacity  
Program Contacts**

**NARMS**

Alicia Anderson  
Office: (404) 371-5900

General (Specimen collection, State-based interventions)  
Richard Skibicki  
(404) 639-2209

**Attachment 3 - Hepatitis Program**

Hepatitis C Virus (HCV) Coordinators – Joanna Buffington, MD, MPH Office: (404) 371-5293	Richard Moyer, MPA Office: (404) 371-5209
--	--

Surveillance for Chronic Hepatitis B and C  
Lyn Finelli, DrPH, MS  
Chief Hepatitis Surveillance Branch  
Office: (404) 371-5910  
Fax: (404) 371-5221

**Attachment 4 - Influenza**

Keiji Fukuda, PhD  
Office: (404) 639-4653

Ann Moen  
Office: (404) 639-4652

**Attachment 5 - West Nile Virus**

John Roehrig, MD  
Office: (970) 221-6442

**Attachment 6 - GBS**

Program Technical Advisors Elizabeth Pishko Office: (404) 371-5334	Janine Cory Office: (404) 371-5467
--	---------------------------------------

## **Program Contacts**

### **Attachment 7 – NEDSS**

Program Operations  
Angela Slaughter  
(404) 371-5357

Technical Development  
Jason Hall  
(404) 371-5366